

**REMARKS*****Status of the Claims***

Claims 22 – 33 and new claims 34 – 53 are pending, with claims 22, 30, 31, and 33 being independent. Without conceding the propriety of the rejections, claims 22, 30, 31, and 33 have been amended and new claims 34 – 53 have been added to even more clearly recite and distinctly claim the invention. Support for the amendments and new claims may be found in the original claims and throughout the specification; therefore, no new matter has been added.

Applicants respectfully request the Examiner to reconsider and withdraw the outstanding rejections in view of the foregoing amendments and following remarks.

***Allowable Subject Matter***

Initially, Applicants would like to thank the Examiner for indicating that claims 30, 31, and 33 contain allowable subject matter. Claims 30, 31, and 33 are objected to as being dependent upon a rejected base claim. Without conceding the propriety of the rejection, Applicants have rewritten claims 30, 31, and 33 in independent form including all of the limitations of the base claim and any intervening claims to expedite prosecution of these claims.

New claims 34 – 39 have been added to depend upon now independent claim 30; new claims 40 – 46 have been added to depend upon now independent claim 31, and new claims 47 - 53 have been added to depend upon now independent claim 33.

Accordingly, it is respectfully submitted that claims 30, 31, and 33 – 53 are now in condition for allowance.

***Claim Rejections under 35 U.S.C. § 103***

Claims 22-25, 29 and 32 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over “Bentonite Well Plugging Technique” (“RMOTC”) in view of U.S. Patent No. 2,836,555 (“Armentrout”). Applicants respectfully disagree with the rejection; therefore, this rejection is respectfully traversed.

RMOTC discloses a technique for using bentonite to successfully plug oil and gas wells without the high cost of cement and plugging equipment. RMOTC discloses that the goal of the testing program of placing dry bentonite in a well casing at the proper depth to achieve an acceptable pressure test using a bentonite plug. The test process involved filling a casing with water and then dropping bentonite pellets down the casing. Pea-gravel was placed above the bentonite. Alternating layers of bentonite and of pea-gravel were placed in the casing up to the surface. ("The Field Performance"). The Office Action acknowledges that RMOTC fails to teach the composition of the nodules, other than that they are "bentonite pellets."

Armentrout relates to a material highly suitable for use in recovering lost circulation in drilling of wells by means of a rotary well drilling apparatus. Armentrout discloses that when drilling wells, frequently the rotary well drilling apparatus traverses a stratum which is cracked or has crevices or interstices therein. Armentrout further discloses that bentonite clay in granular or pellet form can be used for plugging or closing crevices or interstices in the stratum.

Armentrout discloses that it must be possible for the bentonite clay to be delivered from the surface into the crevice or interstices in its dried or dehydrated condition and then wetted or exposed to water and allowed to expand. To accomplish this delivery, Armentrout discloses a granule or pellet containing compressed, dehydrated, expandable bentonite clay coated with a *water insoluble coating*, which is impervious to the ingress of water except at a restricted entrance. (claim 1 and Col. 3, lines 64 – 70).

As such, the pellet is coated with a coating which is of a water insoluble character, such as cellulose acetate, urea formaldehyde, urac resin, polystyrene, and nitrocellulose. (Col. 2, Line 46 – Col. 3, Line 67). The coating prevents ingress of water to the bentonite clay except through a small entrance. (Col. 3, Line 68 – Col. 4, Line 65).

As the pellets of Armentrout proceed down the drill stem to the crevices or interstices in the stratum, water is forced into the small entrance or hole (i.e., the restricted entrance) and contacts the bentonite clay. The bentonite clay begins to expand, and its expansion continues until the pellet and coating are ruptured exposing the bentonite clay to the water for more absorption and expansion. The rupturing of the pellet is delayed by the water insoluble coating and the small entrance for the ingress of

water; therefore, the pellets are afforded an adequate opportunity to be carried to the location where circulation fluid is being lost. (Col. 4, lines 8 – 27). Armentrout further discloses that typical sizes of the pellets are pellets ½” in diameter. (Col. 5, Lines 11-14).

The Office Action acknowledges that Armentrout fails to disclose the proportion of water to form compacted nodules having a density of 2.0 g/cm<sup>3</sup>; mean particle survival at crush of 800 N and 50% survival at a drop of 1.5 meters onto concrete. The Office Action alleges that Armentrout does, however, disclose a nodule with water content similar to that disclosed by Applicants and compression forces similar to those disclosed by Applicants. The Office Action contends that since the Armentrout nodules have a similar composition and are compacted with the same forces, it is apparent that the density, crush force, and drop survival as called for in claim 22 are inherent in the Armentrout nodules.

Paragraph 6 of the Office Action notes that in the previous response, Applicants failed to explicitly traverse the assertion that the Armentrout nodules inherently have the claimed properties (e.g. density, particle survival, etc.); thus, the Office Action states that the Armentrout nodules are taken to be admitted prior art. In response, Applicants hereby *explicitly traverse* the assertion that the Armentrout nodules inherently have the claimed properties.

Applicants respectfully submit that it has *not* been established that the properties of the presently claimed nodules – a density of at least 2.0 g/cm<sup>3</sup>, and a mean particle survival at a crush force of at least 800 newtons and capable of having at least 50% survival when dropped 1.5 meters onto a concrete surface – are inherent in the nodules of Armentrout.

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). To establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is *necessarily* present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given

set of circumstances is not sufficient. *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (emphasis added). MPEP § 2112.

Applicants respectfully submit that it has ***not*** been established that the properties of the presently claimed nodules – a density of at least 2.0 g/cm<sup>3</sup>, and a mean particle survival at a crush force of at least 800 newtons and capable of having at least 50% survival when dropped 1.5 meters onto a concrete surface – are ***necessarily*** present in the pellets of Armentrout.

As described above, the pellets of Armentrout resist water absorption and are able to function appropriately due to the water insoluble coating with the small entrance. Applicants respectfully assert that the presently claimed nodules, with a density of at least 2.0 g/cm<sup>3</sup>, and a mean particle survival at a crush force of at least 800 newtons and capable of having at least 50% survival when dropped 1.5 meters onto a concrete surface, are ***significantly different*** than the pellets of Armentrout. The nodules of the present invention function properly as a well hole-plugging material due to the nodules' high density, high strength, and high durability.

As such, the nodules of the present invention are compacted nodules containing bentonite and water. The bentonite and water are in admixture with a proportion of water to permit the formation of compacted nodules having a density of at least 2.0 g/cm<sup>3</sup>, and a mean particle survival at a crush force of at least 800 newtons and capable of having at least 50% survival when dropped 1.5 meters onto a concrete surface. The high density, high strength, and high durability of the nodules of the present invention allow them to function properly as a well hole-plugging material.

Therefore, Applicants respectfully submit that the nodules of the Armentrout nodules do not inherently have the claimed properties of the nodules of the present invention, and are, in fact, the nodules of the present invention are significantly different than the pellets of Armentrout.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally,

the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP § 2143.

Applicants respectfully submit that even if there were some suggestion or motivation to combine RMOTC and Armentrout and a reasonable expectation of success, RMOTC and Armentrout, even when combined, do not disclose or suggest all the claim limitations. Applicants respectfully submit that neither RMOTC nor Armentrout discloses or suggests a method for plugging a well having a bottom, a length and an opening at a surface, comprising introducing a plurality of nodules into the well, the nodules comprising bentonite in admixture with a proportion of water to permit the formation of compacted *nodules having a density of at least 2.0 g/cm<sup>3</sup>, and a mean particle survival at a crush force of at least 800 newtons and capable of having at least 50% survival when dropped 1.5 meters onto a concrete surface*, and permitting the introduced nodules to come in contact with additional water, in an amount and for a time adequate to cause the nodules to swell and form a substantially hydraulically solid plug in the well. Therefore, even if RMOTC and Armentrout are combined, the resulting combination does not produce all of the claim limitations.

Accordingly, withdrawal of this rejection under 35 U.S.C. § 102(b) or, in the alternative, under 35 U.S.C. § 103(a) is respectfully requested.

Claims 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over RMOTC in view of Armentrout and further in view of U.S. Patent No. 47,410 ("Fraser"). Applicants respectfully disagree with the rejection; therefore, this rejection is respectfully traversed.

Fraser is cited for disclosure of use of hot water in wells, in order to reduce the viscosity of viscous materials. Fraser discloses a method of treating oil-wells for removing obstructions of paraffine. According to the method, a condition in the wells favorable to softening and dissolving solid paraffine is produced. The method consists in introducing water at a high temperature into the wells, when oil is present, to raise the heat of the naphtha to that point at which the paraffine will be dissolved by it and combine with the oil, and, where oil is not present in the wells, in introducing naphtha,

crude oil, benzole, or other hydrocarbon fluid which possesses the property of dissolving paraffine when heat is present.

Applicants respectfully submit that even if there were some suggestion or motivation to combine the cited art and a reasonable expectation of success, the cited art, even when combined does not disclose or suggest all of the claim limitations or claim 22 or any claims dependent thereupon (i.e., claims 26-28).

Applicants respectfully submit that Fraser does not disclose or suggest any process conditions or steps that would supplement any of the above-noted deficiencies of RMOTC in view of Armentrout. Accordingly, even if RMOTC, Armentrout, and Fraser were combined, the resulting combination does not produce all of the claim limitations.

Therefore, withdrawal of this rejection under 35 U.S.C. § 103(a) is respectfully requested.

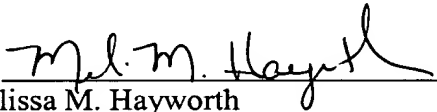
### ***Conclusion***

Without conceding the propriety of the rejections, claims 22, 30, 31, and 33 have been amended, as provided above, to even more clearly recite and distinctly claim particularly preferred embodiments of Applicants' invention and to pursue an early allowance. For the reasons noted above, the art of record does not disclose or suggest the inventive concept of the present invention as defined by the claims.

In view of the foregoing remarks, reconsideration of the claims and allowance of the subject application is earnestly solicited. The Examiner is invited to contact the undersigned at the below-listed telephone number, if it is believed that prosecution of this application may be assisted thereby.

Respectfully submitted,

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